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ABSTRACT

Recent research studies have focused on various ways of addressing the question of how much students learn in community colleges, focusing on factors such as transfer rates, job placement rates, and alumni satisfaction. Few studies, however, have attempted to directly confront the question of student learning, and few measures and tests are adequate to assess what knowledge is being gained by student cohorts. A study conducted by the Center for the Study of Community Colleges (CSCC) attempted to demonstrate that a measure of what community college students know can be obtained. The Center developed the General Academic Assessment (GAA) instrument to measure student knowledge in general education and the liberal arts. The GAA was administered to 8,026 students in 23 two-year colleges, and additional information was obtained on students' age, aspirations, reasons for attending college, number of courses taken in disciplinary areas, total units completed, and self-assessment of knowledge. Study findings included the following: (1) student knowledge was related both to age and number of courses completed in a particular area; (2) age relationships showed up primarily in English usage, social sciences, and humanities, with older students having higher scores; (3) age-related differences did not occur in mathematics or science; (4) a direct relationship existed between the number of units completed and GAA scores; (5) highest scores were made by students attending college for personal interest; and (6) students' self-assessment of their knowledge showed high correlations with their GAA scores. The study confirmed the usefulness of the GAA. (LAL)

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WHAT DO OUR STUDENTS KNOW?

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Abstract

As a way of demonstrating that a measure of what community college students know can be gained, the Center for the Study of Community Colleges built and administered a General Academic Assessment in association with faculty and administrators in Chicago, Miami, Los Angeles, and St. Louis. Results of the test given to 8,026 students in 23 colleges in those districts were arrayed according to students' scores on subtests in humanities, science, social science, mathematics, and English usage, and related to the students' age, aspirations, reasons for attending college, number of courses taken in each area, total units completed, and self assessment.

WHAT DO OUR STUDENTS KNOW?

Arthur M. Cohen

Opportunity with excellence, the motto of the American Association of Community and Junior Colleges, says it all. We want the community colleges to be accessible to anyone who can profit from attendance and we want them to be excellent in their many endeavors. Access suggests maintaining open admissions not limited by financial and scholastic barriers and excellence is helping students achieve their goals in programs suited to the local constituency. Excellence is further defined as "value added," the learning attained by the student while attending the college.

This latter portion of the definition of excellence also receives attention periodically as a measure of institutional quality. For despite all the subordinate roles for community colleges, as educational institutions, they are of necessity judged by the value they add to their students' intellectual capabilities and moral qualities. A school must teach, or what's it for? Students must learn, or what's it done?. While access is essential as a prime component in community college mission, students must eventually display some element of learning or goal attainment lest the access be a hollow victory.

Easily said, less easily measured; how much do students learn in community colleges? The question is usually answered obliquely. Many colleges and some state systems maintain estimates of the success enjoyed by their matriculants who transfer to senior institutions; Radcliffe (1984), Illinois Community

College Board (1984), Fernandez (1984), Doherty and Vaughan (1984), and Young (1982), are recent examples of such studies. Program planners in most colleges also have an idea of the number of students obtaining jobs in the field for which they were trained; see for example, Lee (1984), Scott (1984), New Hampshire State Department of Education (1984), and Lucas (1984). And some colleges survey their alumni periodically, asking if they were pleased with the experiences provided them by the college. Such studies are reported by McConochie (1983), Nespoli and Radcliffe (1983), Staatse (1983), and McMaster (1984).

Curiously, the question of student learning seems the one measure of value added that is least likely to be answered. Comparing the grades earned by community college transfers with those made by students who began at the universities is of marginal utility because relatively few students transfer. Measures of job-gaining are better, even though most of the reports reveal serious methological flaws. Less useful are the studies in which former students are asked if they felt they had learned. The answer to that question is too often confounded with the student's generalized attitude of satisfaction with the entire college experience.

What learning measures are available? Most tests are inadequate to answer questions of what knowledge is being gained by cohorts of students because they were designed for different purposes. Tests administered in individual classrooms are almost invariably course specific; students who did not take those courses are at a disadvantage in answering the questions.

Nationally normed tests in various subject areas are somewhat better but they suffer the defect of having been built for purposes of screening students. To the traditional test maker, the perfect hundred-item test is one that, when it is administered to any number of students, yields a mean, median, and modal score of 50, with no student missing all the answers and no student getting all the items correct. By definition then, half the students are below average and half are above. But the test has not measured the learning attained by the entire group. Nonetheless, those types of tests are popularly employed because they are useful in making decisions about program admission and course-level placement.

Some nationally normed tests show more promise. The American College Testing Program's College Outcomes Measures Project was devised to gain an estimate of student knowledge in general education. Several college and university systems are begining to use it with student cohorts (Jaschik, 1985). The National Assessment of Educational Progress draws samples of students aged 9, 13, and 17, showing knowledge for those cohorts on specific questions of mathematics and social science, along with a smaller set of items in other areas of the liberal arts. However, NAEP is concerned with age and regional cohorts; they have not applied their testing program to individual shcools.

The main problems in testing community college student knowledge are in item selection and population sampling. Of all the universe of knowledge, which questions shall be asked when we want to discover what our students know? Should the items be course specific or should they deal with areas of general

inquiry? A set of items can tap only a minuscule portion of what colleges teach or what students should learn.

Which students shall respond to the test? It is certainly unnecessary to test all the students in the college if we want only to know what cohorts of students know as compared to other cohorts; population sampling can be readily undertaken.

The General Academic Assessment

It is feasible to assess student knowledge in general areas such as the liberal arts by building an instrument for that purpose and by designing the procedures to fit the realities of community college student attendance. The Center for the Study of Community Colleges did just that recently in cooperation with the faculty and staff in four large urban community college districts: Chicago, Miami-Dade, Los Angeles, and St. Louis. The results of this administration are instructive in what they reveal about student knowledge at various stages in the community college programs and as this knowledge relates to student demographics. The project also demonstrated a procedure that can readily employed in administering tests of this type.

The Center had been tracing trends in the liberal arts and transfer education in community colleges by surveying students and faculty and by tabulating information on curriculum and instructional practices. In conjunction with an Andrew W. Mellon Foundation-sponsored study of the liberal arts, the Center staff developed, field tested and administered a student survey and content test that would reveal student knowledge in general education and the liberal arts. This General Academic Assessment

(GAA) was designed to assess knowledge among cohorts of students, not the learning of individual students. It was prepared so that comparisons could be made between students entering the colleges, those who had completed one or more semesters, and those who had various aspirations. The items were selected so that a student's general knowledge could be assessed regardless of where or when that knowledge was gained.

The (GAA) had representative items in the humanities, sciences, social sciences, mathematics, and English usage. The survey portion of the instrument asked students such background questions as age, number of credits earned, educational and occupational aspirations, number of liberal arts courses taken, and self-assessment of their skills in those areas. Items for the content portion were drawn from several sources, The National Assessment of Educational Progress provided numerous usable items in science, social science, and mathematics. Educational Testing Service made items in the humanities and social science available on loan for purposes of the project. The City Colleges of Chicago provided items in English usage, and Miami-Dade Community College provided items in the humanities. Center staff members culled the items with the help of instructors, counselors, and administrators from several California community colleges. Final selection was made by panels of faculty and administrators from the colleges in which the instrument was to be given.

The items were arrayed in five forms and tried out with around 1,300 students in five community colleges in California and Kansas. Questions in the demographic portion of the

instrument were selected from those that had proved useful in the Center's earlier surveys of more than 12,000 students in Washington and California. After revision, the final instrument included 19 demographic and student experience questions and 57 items in humanities, 60 in English usage, 52 in mathemathics, 59 in science, and 71 in social science. The items were distributed at random across the five forms so that each form had a sampling of items in the five areas and each could be completed within one 50 minute class period.

Class sections were used as the unit of sampling because that is the most feasible way of getting a random sample of students enrolled in credit classes. This method has the disadvantage of skewing the sample in the direction of full-time students because a student taking four classes has four times as many chances of being in a sampled class section as a student who is taking only one class. Nevertheless, the sample, based on duplicated head count, is an accurate representation since the full-time students represent higher proportions of the full-time equivalent enrollment in the college.

A total of 8,026 students in the 23 participating colleges (9 in Los Angeles, 4 in Miami, 3 in St. Louis, and 7 in Chicago) completed the form. Their responses were tallied according to total score and to individual sub-tests in humanities, sciences, social sciences, mathematics, and English usage. Scores were converted to 10 point scale scores for each of the areas and a cumulative scale score was tallied.

Of the students in the sample, 41% were aged 20 or less and

another 41% were between age 21 and 30. Twenty-nine percent of them had completed between 0-14 units, 22% between 15-29 units, 19% between 30-44 units, 14% between 45-59 units, and 17% indicated that they had completed 60 or more units. Their primary reason for attending college: prepare for transfer, 57%; gain skills necessary to enter a specific occupation, 27%; gain skills necessary to advance in a current occupation, 9%; satisfy a personal interest, 7%. The sample included 10% Asians, 26% blacks, 42% whites, 18% Hispanics. Twenty-three percent said English was not their native language.

Results

The findings were illustrative of the diversity among community college students, however they suggest that student knowledge is related both to age and to the number of courses that students have completed in particular areas. The age relationships showed up primarily in English usage, social sciences, and humanities; the older the student, the higher the score on those scales. These age-related differences did not occur in mathematics or science. All of the five scales showed a direct relationship between the number of units a student had completed and the scores made. The highest scores were made by students attending college for their personal interest, with those preparing for transfer making the second highest scores on the combined scales. And scores tended to increase for each of the scales to the extent that students took courses in those areas, with the greatest difference being in the humanities and the least difference in English usage as related to number of courses completed in English composition.

One of the more interesting findings was that the students' own assessment of their skills in each of the academic areas showed the highest correlation with their score on that scale. As an example, students were asked, "Compared with other students at this college, how would you rate your ability to understand the implications of scientific and technological developments?" Those students who rated themselves as "poor" scored 4.44 on the science scale while those who rated themselves as "excellent" scored 6.34 on that scale. Students who rated themselves as "poor" in their ability to "edit written material" scored 4.16 on the English usage scale while those who rated themselves as "excellent" scored 6.28. Similar findings obtained for the scales in mathematics when students were asked to "use algebra to solve problems" (3.82 vs. 6.17), for the scale in humanities when they were asked to rate their ability to "understand art, classical music, and drama," (2.66 vs 4.22), and for social science when they were asked to rate their ability to "understand different political ideologies" (4.22 vs 5.82).

Conclusion

The administration of a General Academic Assessment demonstrated the feasibility of a form of cohort testing that is rarely employed in community colleges. The instrument and procedure cannot be used to assign students to classes or to make any other decision about individuals. However, it can be useful for estimating the differences in knowledge exhibited by entering students as compared with the cohorts that have completed a year or two of coursework at the institution. Furthermore, it can be

used to assess entering or graduating students' abilities from year to year, thus gaining a measure of overall value added in a time series.

There was no surprise in the finding that students who take more courses in an area are likely to know more about that area than students who take fewer courses. The age-related scale scores proved interesting in that mathematics and science knowledge showed little age-related differences; those areas seem to be school-related whereas the humanities, social science, and English usage abilities may be enhanced merely by living in and interacting with the culture. One of the more surprising findings was the accuracy of the students' self a ssment. The extremely high correlation between students' self-rating of their abilities and their score made on the scale in that area suggests that community college students are quite realistic, at least in regard to their academic prowess. Students know what they know.

Center staff engaged in the project as a demonstration of what could be done in assessing student knowledge of the liberal arts. The study methodology proved effective in gaining a measure of student ability. Items were selected by community college staff members for their content in each of the five liberal arts areas, with particular attention that the items not be course specific; accordingly, the instrument proved a valid test of general education, within the limits of a quick-score, multiple-choice test.

Because many of the items were borrowed from the copyright holders for use in this one-time research project, the General Academic Assessment will not be made available for use in other

community colleges. However, the design of the entire project is available and might well be adopted for use in other institutions. The procedure and the results are detailed in Riley (1984), available from the ERIC Document Reproduction Service.

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